

**MAT 121****Writing Projects for College Algebra**

Write on only one side of each page. I will not award (or deduct) points for anything written on the backs of pages. Paper without lines (copier paper). Staple top left corner. Leave margins.

**Project #1:** The three ways to solve a quadratic equation are:

1. Factoring
2. Completing the Square
3. Quadratic Formula

Solve both of the following quadratic equations *in all three ways*:

1.  $x^2 + 5x - 36 = 0$
2.  $10x^2 + 11x - 6 = 0$

Solve the quadratic equation by *quadratic equation and completing the square*:

3.  $x^2 - 8x - 10 = 0$

Discuss the advantages and disadvantages of each method, when one method might be preferred over another. I'm looking for about a page on this, and I'm expecting you to use *paragraphs*.

**Project #2: Completing the Square to Graph a Quadratic Function**

Complete the square for each of the following and graph the function by transforming the basic function  $f(x) = x^2$ , using Section 1.5 techniques.

1.  $g(x) = x^2 + 8x + 16$
2.  $h(x) = 3x^2 - 2x - 5$
3.  $w(x) = -x^2 + 8x - 15$

You may also be helped by [Handout for Basic Functions and Transformations](#) that you would be wise to reference (and embrace). There is also a [Handout for Completing the Square and Graphing Quadratic Functions](#) and an Accompanying Video.

**Project #3: Take-Home Portion of Test 3.**

1. I'll send you e-copy in e-mail. You will turn it in when you come to take the sit-down version of Test 3.
2. Counts 20% of Test 3 grade.

**Project #4: The Three Kinds of Linear System.**

1. Submit three examples of linear systems in *three variables* and solve them using Elimination Method. Matrix Methods are optional (just a different version of elimination).
  - a. One system must be inconsistent.
  - b. One system must be consistent, with infinitely many solutions.
  - c. One system must be consistent, with a *unique* solution.
2. Discuss each system in a few sentences.